

WHAT IS CLAIMED IS:

1. A smectite clay slurry, comprising:
 - (a) at least 2 wt.% of one or more smectite clays, active clay basis;
 - (b) from about 0.5 to 15 wt.% based on the weight of the smectite clay active clay basis of one or more phosphonate additives; and
 - (c) water.
2. A smectite clay slurry according to Claim 1, wherein the smectite clay is hectorite.
3. A smectite clay slurry according to Claim 2, wherein the smectite clay is beneficiated hectorite.
4. A smectite clay slurry according to Claim 1, wherein the clay slurry comprises 5-20 wt.% smectite clay, active clay basis.
5. A smectite clay slurry according to Claim 1, further comprising a biocide.
6. A smectite clay slurry according to Claim 1 wherein the phosphonate additive is selected from the group consisting of:
 - a) phosphonate compounds that contain at least two moieties having the structure —PO(OH)_2 , and salts thereof, and
 - b) phosphinate compounds that contain at least two moieties having the structure —PO(OH) , and salts thereof, and
 - c) compounds which may form phosphonic or phosphinic acids, or salts thereof, under the conditions of use in making the slurry.
7. The smectite clay slurry according to Claim 1 wherein the phosphinate additive is selected from the group consisting of:
 - a) diphosphonic acids of formula $\text{R}^1\text{R}^2\text{C(PO(OH)}_2)_2$ and their salts, and

b) diphosphonic acids of formula $R^1-CR^2(PO(OH)_2)-R^3-CR^2PO(OH)_2-R^1$ and their salts, and

c) phosphonic acid salts with general formula $R^1R^4C=C(PO(O^-)_2)_2$

where R^1 is selected from the group comprising H, a linear or branched alkyl, alkene, hydroxyalkyl, aminoalkyl, hydroxyalkene, aminoalkene with 1 to 22 carbon atoms or an aryl, hydroxyaryl, aminoaryl with 6 to 22 carbon atoms; R^2 is selected from the group comprising R^1 and OH; R^3 is an alkyl with 0 to 22 carbon atoms and R^4 is selected from the group R^1 .

8. A smectite clay slurry according to Claim 1, wherein the phosphonate additive is selected from the group consisting of 1-hydroxyethylene-1,1-diphosphonic acid, a sodium salt thereof or an ester thereof.

9. A smectite clay slurry according to Claim 8, wherein the pH is in a range of about 6 to about 8.

10. A smectite clay slurry comprising:

- (a) about 2 to 25 wt.% hectorite clay, active clay base;
- (b) about 0.5 to 6 wt.% based on the weight of the hectorite clay active clay basis of one or more phosphonate additives; and
- (c) water.

11. A smectite clay slurry according to Claim 10, where the phosphonate additive is selected from the group consisting of a 1-hydroxyethylene-1,1-diphosphonic acid, a salt thereof and an ester thereof.

12. A method of making a smectite clay slurry, comprising:

- (a) treating a mixture of one or more smectite clay and water with one or more phosphonate additives to form a clay slurry; and
- (b) adjusting the pH of the clay slurry to above 5.5.

13. A method of making a smectite clay slurry according to Claim 12, wherein the adjusting of the pH is done by adding HCl, H₃PO₄, H₂SO₄, or CH₃COOH.

14. A method of making a smectite clay slurry, comprising:

(a) treating a mixture of one or more smectite clays and water with one or more phosphonate additives to form a clay slurry; and

(b) shearing the clay slurry.

15. A method according to Claim 14, wherein the smectite clay is hectorite.

16. A method according to Claim 14, wherein the phosphonate additive is 1-hydroxyethylene-1,1-diphosphonic acid tetra sodium salt.

17. A method of making a smectite clay slurry according to Claim 14, wherein the shearing is performed by a Gaulin homogenizer.

18. A construction material comprising the smectite clay slurry according to Claim 1.

19. A construction material comprising the clay slurry according to Claim 1, wherein the construction material is selected from the group of concrete, asphalt, cement, or sand.

20. A paint comprising the smectite clay slurry according to Claim 1.